

IN THE CLAIMS

1. (Previously Presented) A wireless router for a wireless communications network, comprising:

a first interface operable to communicate radio frames for a call with a mobile device, the first interface operable to generate a label for each radio frames received from the mobile device;

a second interface operable to communicate wireline packets for the call with a wireline network, the second interface operable to generate a label for each wireline packet received from the wireline network;

a traffic controller operable to convert wireline packets received for the call from the wireline network to radio frames, to route the radio frames to the mobile device through the first interface, to convert radio frames received for the call from the mobile device to wireline packets, to route the wireline packets to the wireline network through the second interface, and to communicate with at least one secondary wireless router, wherein the traffic controller is further operable to communicate with wireline packets and radio frames with at least one secondary wireless router for soft handoff of the call and to communicate with a public switched telephone network (PSTN) gateway through the wireline network; and

a virtual path generator operable to configure wireless virtual paths for the call in the wireline network to the at least one secondary wireless router for soft handoff processing for the call to the at least one secondary wireless router, wherein the virtual paths are multi-protocol label switched path (MPLS), the traffic controller operable to route wireline packets and radio frames to the at least one secondary wireless router over the wireless virtual paths in

accordance with the labels associated with the wireline packets and the radio frames.

2. (Previously Presented) The wireless router of Claim 1, wherein the radio frames and associated labels are placed into Internet Protocol (IP) packets for transport over the wireless virtual paths to the at least one secondary wireless router.

3. (Previously Presented) The wireless router of Claim 1, wherein the wireless router is operable to be directly connected to a wireline IP router, the traffic controller further operable to route wireline packets through the second interface directly to the wireline IP router.

4. (Previously Presented) The wireless router of Claim 1, wherein the traffic controller is a technology independent wireless traffic processor.

5. (Previously Presented) The wireless router of Claim 1, wherein the call is a first call and the mobile device is a first mobile device, further comprising:

the first interface operable to communicate radio frames for the first call with the first mobile device using a first access technology and to communicate radio frames for a second call with a second mobile device using a second access technology; and

the traffic controller operable to convert wireline packets received for the second call from the wireline network to radio frames for the second access technology, to route the radio frames to the second mobile device through the second interface, to convert radio frames received from the second mobile device to wireline packets, and to route the wireline packets to the wireline network through the second interface.

6. (Canceled).

7. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to communicate with the at least one secondary wireless router through the wireline network for the soft handoff of the call.

8. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to communicate with the at least one secondary wireless router through the wireline network for micromobility of the call.

9. (Canceled).

10. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to communicate with a call agent through the wireline network.

11. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to communicate with a media gateway through the wireline network.

12. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to communicate with a policy manager through the wireline network.

13. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to communicate with an authentication, authorization, and accounting (AAA) server through the wireline network.

14. (Previously Presented) The wireless router of Claim 1, the traffic controller operable to communicate with disparate radio access networks through the wireline network.

15. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to classify wireline packets and radio frames for the call.

16. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to provide security for the call.

17. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to reserve radio frequency (RF) resources for the call.

18. (Previously Presented) The wireless router of Claim 1, the traffic controller further operable to perform quality of service (QoS) management for the call.

19. (Previously Presented) The wireless router of Claim 1, the first interface, second interface, and traffic controller each further comprising software stored on a computer-readable medium.

20. (Canceled).

21. (Previously Presented) The wireless router of Claim 1, the traffic controller including a selector operable to receive a first instance of a particular radio frame from the mobile device, to receive a second instance of the particular radio frame from the second router, and to select one of the first and second instances for transmission to a destination device for the call.

22. (Previously Presented) The wireless router of Claim 1, the traffic controller including a distributor operable to receive wireline packets from the wireline network destined for the mobile device, to transmit a first instance of a particular wireline packet to the mobile device, and to transmit a second instance of the particular wireline packet to the at least one secondary wireless router for transmission to the mobile device.

23. (Canceled).

24. (Previously Presented) The wireless router of Claim 1, the first interface operable to communicate radio frame traffic for the call with the mobile device.

25. (Previously Presented) The wireless router of Claim 1, the second interface operable to communicate IP traffic for the call with the wireline network.

26. (Previously Presented) The wireless router of Claim 1, the first interface, the second interface, virtual path generator, and traffic controller each comprising software stored on a computer-readable medium.

27. (Previously Presented) The wireless router of Claim 1, the first interface, second interface, virtual path generator, and traffic processor each comprising at least one of software stored on a computer-readable medium and hardware encoded with predefined instructions.

28. (Previously Presented) The wireless router of Claim 21, the selector further operable to synchronize the first and second instances , to compare the first and second instances of the wireless traffic, and to select one of the first and second instances based on the comparison.

29. (Previously Presented) The wireless router of Claim 22, the distributor further operable to transmit the second instance to the at least one secondary wireless router with a synchronization bias for synchronous transmission of the second instance with the first instance to the mobile device.

30. (Previously Presented) The wireless router of Claim 1, further comprising a path generator operable to configure an Internet protocol (IP) flow in the wireline network to the at least one secondary wireless router for soft handoff processing for the call.

31. (Previously Presented) A wireless communications network, comprising:

- a first wireless router;

- a second wireless router;

- a first wireless virtual path configured for a call between the first and second routers for transmission of wireline protocol traffic; and

- a second wireless virtual path configured for the call between the first and second routers for transmission of wireless protocol traffic, the first and second wireless virtual paths each comprising a multi-protocol label switched path (MLPS), the wireline protocol traffic and the wireless protocol traffic including labels generated upon receipt of the wireline protocol traffic and the wireless protocol traffic for routing over the first and second wireless virtual paths to facilitate soft handoff of a call.

32. (Canceled).

33. (Previously Presented) The wireless communications network of Claim 31, the wireline protocol traffic comprising Internet protocol (IP) traffic and the wireless protocol traffic comprising radio frames.

34. (Previously Presented) The wireless communications network of Claim 31, the first and second wireless routers operable to intercommunicate over the second wireless virtual path to provide a soft handoff for a call.

35. (Previously Presented) The wireless communications network of Claim 31, the first and second wireless routers operable to intercommunicate to allocate bandwidth for a call.

36. (Previously Presented) The wireless communications network of Claim 31, the first and second wireless routers operable to intercommunicate to reserve resources for a call.

37. (Previously Presented) The wireless communications network of Claim 31, the first and second wireless routers operable to intercommunicate to provide mobility management for a call.

38. (Previously Presented) The wireless communications network of Claim 31, further comprising:

a set of active wireless routers for a call, the set including the first and second routers; and

the set of routers operable to intercommunicate over wireless virtual paths to provide a plurality of call mobility, soft handoff, and resource management for the call.



39. (Currently Amended) A communications packet transmitted on a wireline link, the communication packet signal comprising:

a ~~radio-frame~~ payload including one of wireless protocol and wireline protocol traffic for a call with a mobile device; and

a virtual path label generated upon receipt of the ~~radio frame from the mobile device~~ payload for the call for routing the ~~radio-frame~~ payload over a wireless virtual path associated with one of the wireless protocol traffic and the wireline protocol traffic established for the call to a wireless router for call processing, the virtual path label comprising a multi-protocol label switch (MPLS) path label.

40. (Canceled).

41. (Currently Amended) The communications signal of Claim 39, wherein the ~~radio-frame~~ payload is generated by the mobile device.

42. (Currently Amended) The communication signal of Claim 39, further comprising a synchronization bias for the ~~radio-frame~~ payload.

43. (Previously Presented) The communications signal of Claim 39, the virtual path label identifying a primary router for the call.

44. (Previously Presented) A wireless communications network, comprising:

a plurality of wireless routers; and

the plurality of wireless routers each operable to receive traffic from a mobile device, to route the traffic directly to an Internet protocol (IP) wireline network, and to intercommunicate, wherein the routers are further operable to intercommunicate to provide a soft handoff for a call including the mobile device using a multi-protocol label switch (MPLS) protocol, wherein one of the plurality of wireless routers is established as the primary router, the primary router operable to establish MPLS wireless virtual paths for the call with one or more secondary routers of the plurality of wireless routers identified as being active within the wireless communications network, the primary router operable to route the traffic to the one or more secondary routers over the MPLS wireless virtual paths according to labels assigned to the traffic upon being received from the mobile device to facilitate soft handoff of the call to the one or more secondary routers upon a determination by the primary router that it is no longer able to process the call.

45. (Previously Presented) The wireless communications network of Claim 44, the plurality of wireless routers further operable to intercommunicate to reserve resources for a call including the mobile device.

46. (Previously Presented) The wireless communications network of Claim 44, the plurality of wireless routers further operable to intercommunicate to allocate bandwidth to a call including the mobile device.

47. (Canceled).

48. (Previously Presented) The wireless communications network of Claim 44, the plurality of wireless routers further operable to intercommunicate to provide call mobility for a call including the mobile device.

49. (Previously Presented) The wireless communications network of Claim 44, the plurality of wireless routers further operable to intercommunicate to establish a call for the mobile device.

50. (Currently Amended) A wireless router for communicating signals in a wireless network, the wireless router comprising:

a radio frequency (RF) front end operable to receive a first signal from a mobile device and generate a label associated with the first signal;

a selection and distribution unit coupled to the RF front end, the selection and distribution unit operable to receive the first signal, to receive a second signal corresponding to the first signal from a disparate wireless router transmitted over a first wireless virtual path for wireless protocol traffic established according to the first signal in accordance with a label generated by the disparate wireless router and associated with the second signal, and to select one of the first signal and the second signal; and

a resource manager coupled to the selection and distribution unit, the resource manager operable to communicate the selected signal to a wireline network, wherein the wireless router is a first wireless router, and wherein the selection and distribution unit comprises a label switched path (LSP) module operable to define the first wireless virtual path for the wireless protocol traffic from the first wireless router to the disparate wireless router, the LSP module of the selection and distribution unit operable to define a second wireless virtual path for wireline protocol traffic associated with the wireless protocol traffic from the first wireless router to the disparate wireless router.

51. (Canceled).

52. (Currently Amended) The wireless router of Claim 50, wherein the selection and distribution unit is operable to define the first and second wireless virtual ~~path~~ paths using a forwarding table.

53. (Currently Amended) The wireless router of Claim 50, wherein the selection and distribution unit is operable to define the first and second wireless virtual ~~path~~ paths using a trigger rule.

54. (Previously Presented) The wireless router of Claim 50, wherein the selection and distribution unit is operable to select one of the first signal and the second signal using pattern matching on a frame-by-frame basis.

55. (Previously Presented) The wireless router of Claim 50, wherein the selection and distribution unit is operable to select one of the first signal and the second signal using error correction bits.

56. (Previously Presented) The wireless router of Claim 50, wherein the selection and distribution unit is operable to synchronize the first signal and the second signal using a frame sequence number (FSN) in each of the signals.

57. (Previously Presented) The wireless router of Claim 50, further comprising an active list comprising at least one cell site with which the mobile device is actively communicating.

58. (Previously Presented) The wireless router of Claim 50, further comprising a candidate list comprising at least one cell site with which the mobile device is operable to communicate.

59. (Previously Presented) The wireless router of Claim 50, further comprising an antenna coupled to the RF front end and operable to receive the first signal from the mobile device and to communicate the first signal to the RF front end.

60. (Currently Amended) A method for configuring a wireless communications network for processing a call, comprising:

receiving a communication from a mobile device identifying an active set of wireless routers for a call, the active set of wireless routers including a primary wireless router and one or more secondary wireless routers for soft handoff of the call;

informing the primary and secondary wireless routers of their status;

configuring wireless virtual paths for wireless protocol traffic and wireline protocol traffic for the call between the primary and secondary wireless routers; and

allocating resources in the primary and secondary wireless routers for the call, wherein the wireless virtual paths are label switch paths (LSPs);

forwarding information associated with the call between the primary and secondary wireless routers over the wireless virtual paths, the information including labels generated upon receipt for routing over the wireless virtual paths to facilitate the soft handoff of the call.

61. (Canceled).

62. (Previously Presented) The method of Claim 60, wherein the wireless virtual paths comprise radio frame virtual paths.

63. (Previously Presented) The method of Claim 60, wherein the wireless virtual paths comprise LSPs transporting at least one of CDMA, CDMA 2000, WCDMA, TDMA and GSM radio frames.

64. (Currently Amended) A method for providing soft handoff for a call including a mobile device, comprising:

receiving an instance of a radio frame from a mobile device at an active set of wireless routers, the active set including a plurality of active wireless routers for a call;

assigning a label to each instance of the radio frame at each of the plurality of active wireless routers;

establishing at least a first wireless virtual path for carrying wireline protocol traffic and a second wireless virtual path for carrying wireless protocol traffic between the primary wireless router and secondary wireless routers;

routing the radio frame instances from secondary wireless routers in the active set to a primary wireless router in the active set over a wireless virtual path established for the call by the primary wireless router to the secondary wireless routers in accordance with the labels; and

selecting at the primary wireless router one of the radio frame instances for transmission to a destination device, wherein the radio frames are routed from the secondary wireless routers to the primary wireless router over the wireless virtual paths through label switched paths (LSPs) established between the primary and the secondary wireless routers.



65. (Previously Presented) The method of Claim 64, further comprising:

assembling the selected radio frame instance with other selected radio frame instances to form an Internet protocol (IP) packet; and

transmitting the IP packet to the destination device.

66. (Previously Presented) The method of Claim 64, wherein the radio frames received at the primary wireless router from the mobile device are routed to the secondary wireless routers through the wireless virtual path.

67. (Previously Presented) The method of Claim 64, wherein the radio frames are routed from the secondary wireless routers to the primary wireless router through virtual paths established between the primary and the secondary wireless routers.

68. (Canceled).

69. (Previously Presented) The method of Claim 64, further comprising:

receiving traffic from the destination device at the primary wireless router;

assigning a label to each instance of the traffic at the primary wireless router;

multicasting instances of the traffic from the primary wireless router to each of the secondary wireless routers in the active set of wireless routers over the wireless virtual paths established for the call in accordance with the labels; and

transmitting instances of the traffic to the mobile device from each of the wireless routers in the active set.

70. (Previously Presented) The method of Claim 69, further comprising synchronously transmitting instances of the traffic from the wireless routers in the active set to the mobile device.

71. (Previously Presented) The method of Claim 69, wherein the traffic comprises an Internet protocol (IP) packet, further comprising:

segmenting the IP packet into a plurality of radio frames at the primary wireless router;

assigning a label to each radio frame;

multicasting instances of each radio frame to the secondary wireless routers in the active set of wireless routers over the wireless virtual paths established for the call in accordance with the labels; and

transmitting instances of the radio frame to the mobile device from each of the wireless routers in the active set.

72. (Previously Presented) The method of Claim 69, further comprising transmitting at least one instance of the traffic from the primary wireless router to a secondary wireless router with a synchronization bias operable to delay transmission of the instance from the secondary wireless router to the mobile device.

73. (Canceled).

74. (Canceled).

75. (Canceled).

76. (Currently Amended) A method for providing mobility for mobile devices in a wireless communications network, comprising:

providing a network anchor wireless router;

providing a primary wireless router receiving traffic from a mobile device for a call and forwarding the traffic to the network anchor wireless router through a wireless virtual path carrying wireless protocol traffic established for the call by the primary wireless router for delivery to a destination device, the primary wireless router assigning labels to the traffic to facilitate routing to the network anchor wireless router over the wireless virtual path;

the network anchor wireless router receiving traffic from the destination device and forwarding the traffic to the primary wireless router through a wireless virtual path carrying wireline protocol traffic established for the call by the primary wireless router for delivery to the mobile device, the network anchor wireless router assigning labels to the traffic to facilitate routing to the primary wireless router over the wireless virtual path;

receiving a new primary wireless router;

terminating the existing wireless virtual path between the network anchor and primary wireless router; and

establishing a new wireless virtual path for the call between the network anchor wireless router and the new wireless router for communication of traffic for the call, wherein the virtual paths comprise label switch paths (LSPs).

77. (Canceled).